Work Order ID 54445

December 9, 2009 11:29:49 AM

Item ID: D3304-043 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Tube Assembly

Start Date: 09/12/2009 **Start Qty:** 12.00 **Cust Item ID:**

Required Date: 16/12/2009 **Req'd Qty:** 12.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** MM **Date:** 9-11-09 **Tooling:** _____ **Date:** _____ **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	**Revision Nbr**								
D3304	Rev B								
100	BAND SAW	0.00				12	0		
Bandsaw	**Memo**	0.00	MM 09/12/16						
Jeaspa Bandsaw	1- Cut blank: 22.00" as per Dwg D3304								
110	CONVENTIONAL LATHE	0.00				12	0		
Lathe Conv	**Memo**	0.00	MM 09/12/16						
Conventional Lathe	1- Cut blank: 22.00" as per Dwg D3304□2- Turn as per Dwg D3304□3- Deburr								
120	QC2- Inspect parts off machine FAI/FAIB	0.00				12	0		
QC	**Memo**	0.00	MM 09/12/16						
Quality Control									

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 54445

December 9, 2009 11:29:49 AM

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Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC8- Inspect parts - second check	0.00				12	0		
QC	**Memo**	0.00							
Quality Control									
140		0.00				12X			
Small Fab									
Small Fab	**Memo**	0.00							
	1- Form as per Dwg D3304□ Ensure that bend radius does not fall into straight section using DT8756.□2- Drill as per Dwg D3304 using drill Jig D3304-T1□3- Cut tube to length as per Dwg D3304□4- Deburr								
150	QC5- Inspect part completeness to step on W/O	0.00				12			
QC	**Memo**	0.00							
Quality Control									

H.A 09/12/20

=7 M.A 09/12/23

05-12-29

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

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Reference:

Run Start

Stop

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	Large Fab	0.00				12x		Cp	09/12/31
Large Fab	**Memo**	0.00							
Large Fab	Weld bracket as per Dwg D3304 and QSI 004 using DT8775								
170	QC9- Inspect visual per QSI004- Fusion Welds	0.00				12		PD	10.01.04
QC	**Memo**	0.00							
Quality Control									
180	QC5- Inspect part completeness to step on W/O	0.00				412			
QC	**Memo**	0.00							
Quality Control									

=> S [redacted] 10/01/04

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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NOTE: Date & initial all entries

Work Order ID 54445

December 9, 2009 11:29:49 AM

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Item Name: Tube Assembly

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Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190 Powdercoat Powder Coating	Grey Sandtex(Ref:4.3.5.6) per QSI005 4.3 M112588 **Memo** START TIME: 10:30AM OVEN TEMPERATURE: 11:00AM FINISH TIME: 320°F	0.00 0.00	7 M	10/01/05		X12	0		
200 QC Quality Control	QC3- Inspect Part Finish **Memo**	0.00 0.00	BR	10-01-5		(12)	Ø		
210 Small Fab Small Fab	Small Fab **Memo** Assemble lanyard and pip pin as per Dwg D3304 Identify as D3304-043	0.00 0.00				EP 10/01/06	(12)		

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 54445

December 9, 2009 11:29:49 AM

Item ID: D3304-043 **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Tube Assembly

Start Date: 09/12/2009 **Start Qty:** 12.00 **Cust Item ID:**

Required Date: 16/12/2009 **Req'd Qty:** 12.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220	QC5- Inspect part completeness to step on W/O	0.00				(12)	0		
QC	**Memo**	0.00							
Quality Control									
230	Identify as per dwg & Stock Location: 187	0.00							
Packaging	**Memo**	0.00							
Packaging									
240	QC21- Final Inspection - Work Order Release	0.00							
QC	**Memo**	0.00							
Quality Control									

10/01/07 MF 10-01-07

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

December 9, 2009 11:29:54 AM

Work Order ID: 54445

Parent Item: D3304-043

Parent Item Name: Tube Assembly

Comments:

Start Date: 09/12/2009 **Required Date:** 16/12/2009

Start Qty: 12.00 **Required Qty:** 12.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
CBL-1240		Purchased	No			100	Each	102.1380	12.4992	EB	10/01/06	
Cable												
				Warehouse Location		**Loc Qty**		**Loc Code**				
				Main Warehouse								
				ST		102.1379737						
				107234		102.137974				12.4992		
M304TR0.875W.065		Purchased	No			160	f	126.3000	23.4215			
304 round tube .875 x .065w												
				Warehouse Location		**Loc Qty**		**Loc Code**				
				Main Warehouse								
				MAT		126.3				1.985 (x1)	mwt	
				110472		6.3				21.175 (x11)	09/12/06	
				110680		120						
BLBS-0016		Purchased	No			210	Each	24.0000	12.0000	10-1-5	12x 54	
PIP PIN												
				Warehouse Location		**Loc Qty**		**Loc Code**				
				Main Warehouse								
				ST		24						
				109414		24				12		

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W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

December 9, 2009 11:29:54 AM

Work Order ID: 54445

Parent Item: D3304-043

Parent Item Name: Tube Assembly

Comments:

Start Date: 09/12/2009 **Required Date:** 16/12/2009

Start Qty: 12.00 **Required Qty:** 12.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
CBL-460		Purchased	No			210	Each	396.0000	24.0000	10-1-5 sl 12		
Loop Sleeve												

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	396	
111342	210	
113002	186	

D3304-7		Manufactured	No			210	Each	16.0000	12.0000			
Bracket												

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	16	
42231	3	
44398	13	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	54445
Description: Tube Assembly	Part Number:	D3304-3
Inspection Dwg: D3304 Rev: B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

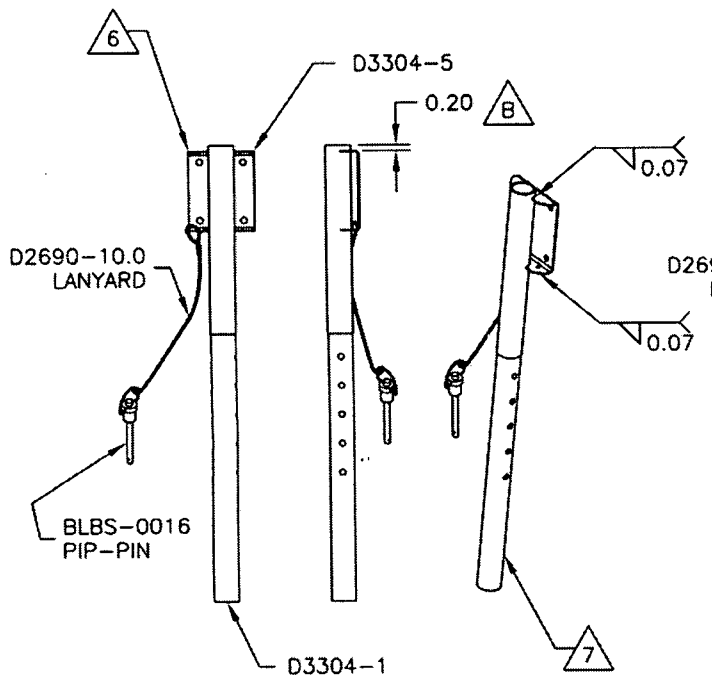
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
9.25	+/-0.030	9.26	V			
Ø0.840	+/-0.010	Ø.841	/			
Ø0.875	+/-0.010	Ø.873	/			
0.065	+/-0.010	.062	/			

Measured by:	MWF
Date:	09/12/16

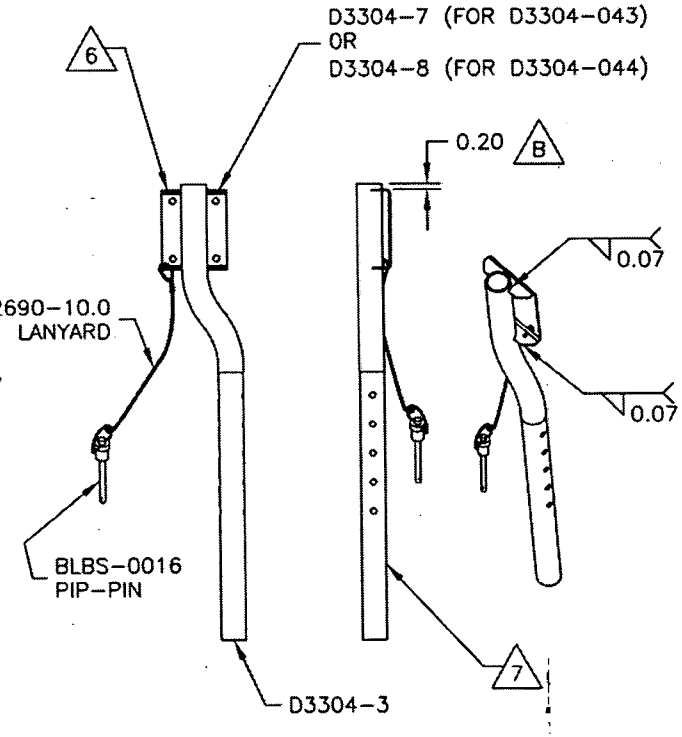
Audited by:	Y.A
Date:	09/12/20

Prototype Approval:	N/A
Date:	N/A

Rev	Date	Change	Revised by	Approved
A	04.09.08	New Issue P/O D3304-043/-044	KJ/JLM	
B	06.03.09	Dwg Rev updated	KJ/JLM	



D3304-041 TUBE ASSEMBLY



D3304-044 TUBE ASSEMBLY (SHOWN)
D3304-043 OPPOSITE

D3304-041/-043/-044 NOTES:
1) FINISH: POWDER COAT GREY SANDTEX (REF. 4.3.5.6) PER DART QSI 005 4.3
2) WELD PER DART QSI 004
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015
6) IDENTIFY AS INDICATED USING FINE POINT PERMANENT INK MARKER "TCCA-PDA, DART AEROSPACE LTD, P/N D3304-XXX B/N BXXXXX, FOR PRODUCT ELIGIBILITY SEE PDA04-11"
7) IF BEING ASSEMBLED WITH D3303-041, ADD THE FOLLOWING USING A FINE POINT PERMANENT INK MARKER: "TCCA-PDA, DART AEROSPACE LTD, P/N D412-724-XXX B/N BXXXXX, FOR PRODUCT ELIGIBILITY SEE PDA04-11"

RELEASED
'15.08.11

REV	DATE	DESCRIPTION
A	04.08.18	NEW ISSUE
B	05.07.15	UPDATE DIMENSIONS; ADD D3304-7/-8

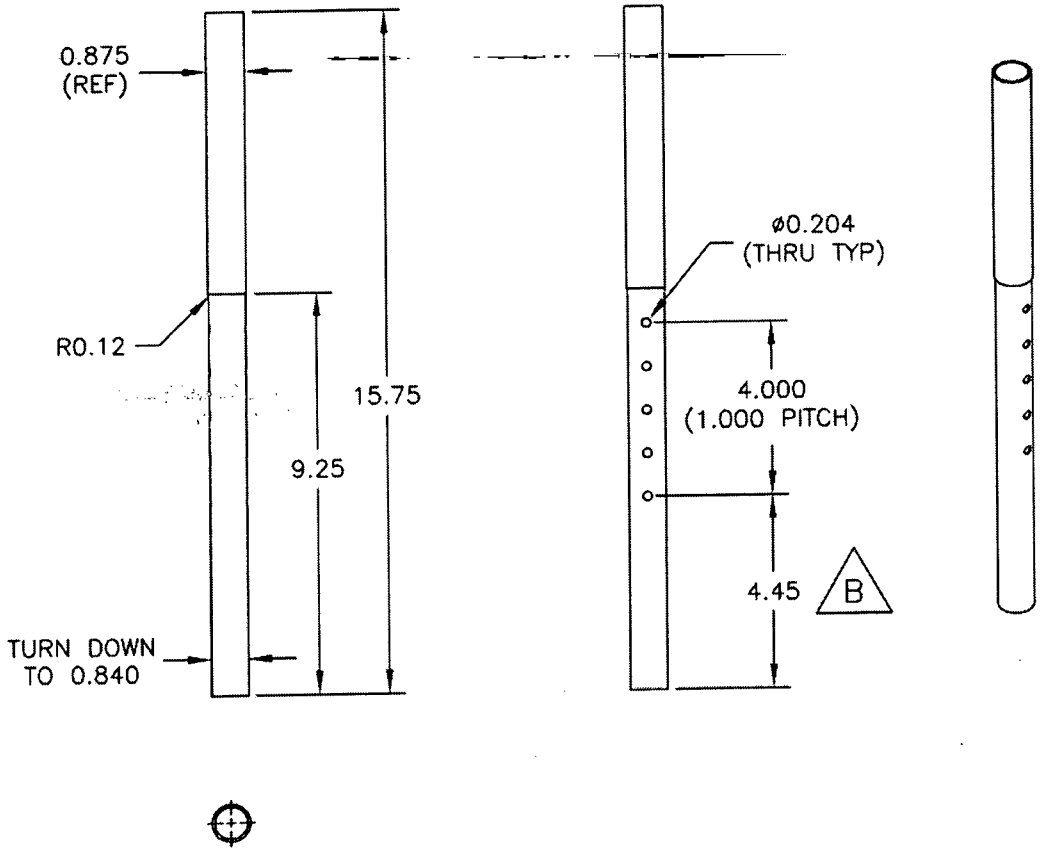
DESIGN: RF | DRAWN BY: RF | CHECKED: | APPROVED:
DATE: 05.07.15
TITLE: TUBE ASSEMBLY
DRAWING NO.: D3304
REV. B
SHEET 1 OF 4
SCALE: 1:6

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

w/o 514445

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
RF	RF		
CHECKED	APPROVED	DRAWING NO.	REV. B
		D3304	SHEET 2 OF 4
DATE		TITLE	SCALE
05.07.15		TUBE ASSEMBLY	1:4

RELEASED
05.08.11



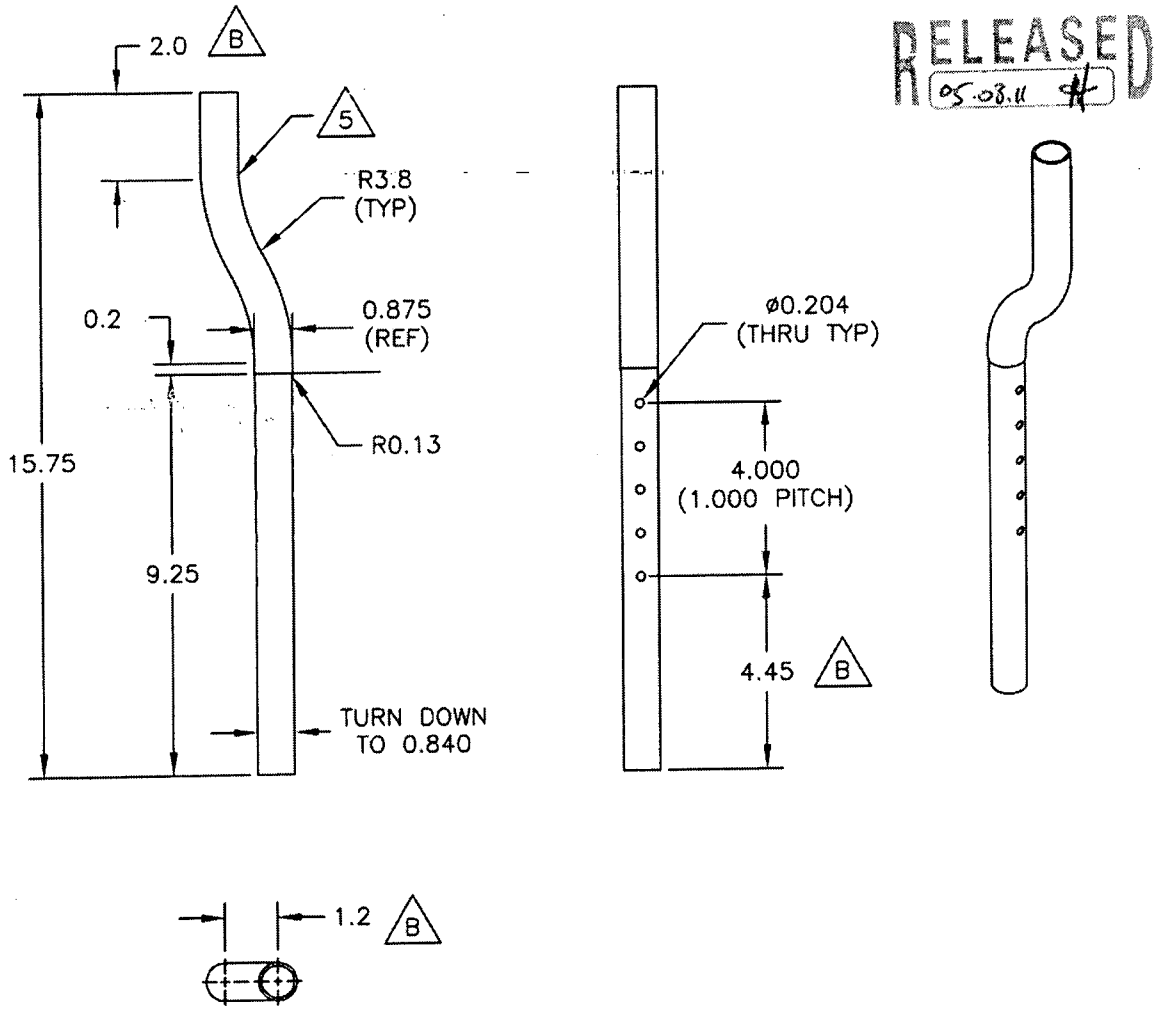
D3304-1 TUBE

D3304-1 NOTES:
1) MATERIAL: AISI 304/316 STAINLESS STEEL TUBE ø0.875 x 0.065 WALL
(REF. DART SPEC M304TR0.875W.065) ENSURE SEAMLESS TUBE IS USED
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015

w/o 54445

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
RF	RF		
CHECKED	APPROVED	DRAWING NO. D3304	REV. B SHEET 3 OF 4
DATE 05.07.15		TITLE TUBE ASSEMBLY	SCALE 1:4

RELEASED
05.08.11



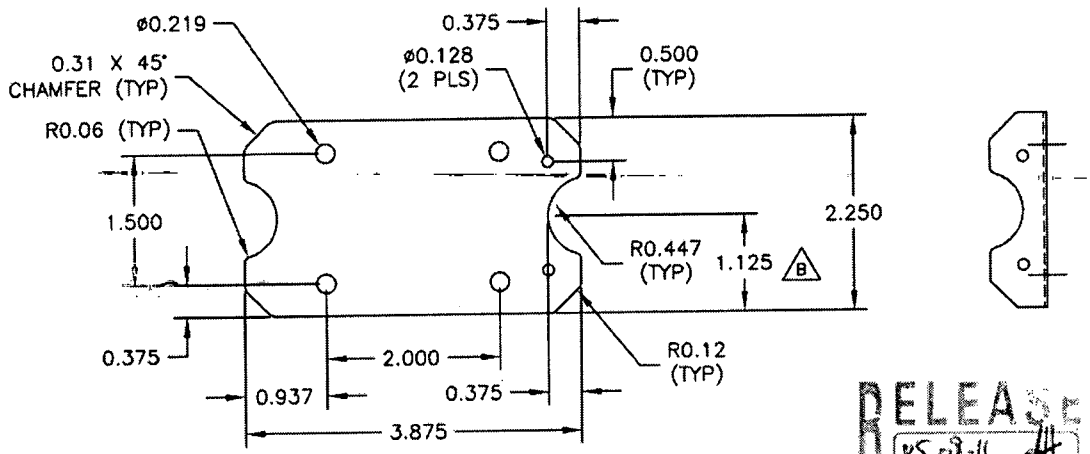
D3304-3 TUBE

D3304-3 NOTES:

1) MATERIAL: AISI 304/316 STAINLESS STEEL TUBE ø0.875 x 0.065 WALL
   (REF. DART SPEC M304TR0.875W.065) ENSURE SEAMLESS TUBE IS USED
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015
5) BEND LINES 9.625, 13.375 DIMENSIONS

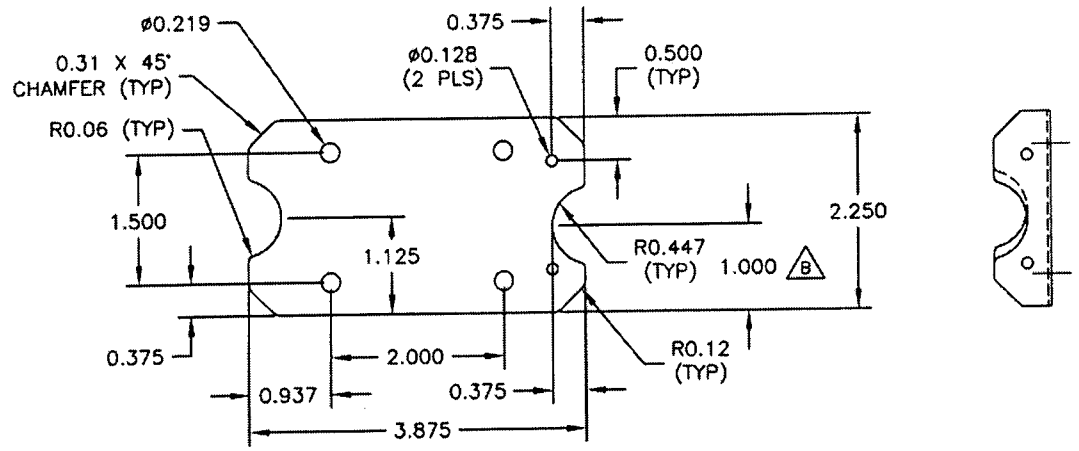
W/O 54445

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
RF	RF		
CHECKED	APPROVED	DRAWING NO. D3304	REV. B SHEET 4 OF 4
DATE 05.07.15		TITLE TUBE ASSEMBLY	SCALE 1:2

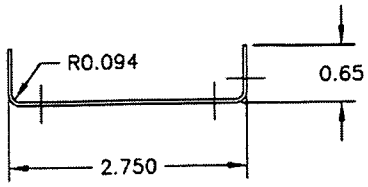


RELEASED
05.07.11

D3304-5 FLAT PATTERN



D3304-7/-8 FLAT PATTERN



D3304-5/-7 BRACKET
D3304-8 OPPOSITE B

NOTES:
1) MATERIAL: AISI 304/316 SS 0.040 THICK SHEET (REF. DART SPEC M304S20GA)
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015